1014-30-275 **Michael J. Miller*** (millermj@lemoyne.edu), Dept. of Mathematics, Le Moyne College, Syracuse, NY 13214. *Unexpected local extrema for the Sendov conjecture.*

Let $S(n)$ be the set of all polynomials of degree n with all roots in the unit disk, and define $d(P)$ to be the maximum of the distances from each of the roots of a polynomial P to that root's nearest critical point. In this notation, Sendov's conjecture asserts that $d(P) \leq 1$ for every $P \in S(n)$.

Define $P \in S(n)$ to be *locally extremal* if $d(P) \geq d(Q)$ for all nearby $Q \in S(n)$, and note that identifying all locally extremal polynomials would settle the Sendov conjecture.

In this paper, we construct locally extremal polynomials of degrees 8, 12, 14, 20 and 26 that are of an unexpected form. (Received September 04, 2005)